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PARK SOIL AND WATER CONSERVATION DISTRICT

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WORK PROGRAM

Revised - 1968 -

I. PURPOSE OF THE DISTRICT PROGRAM

The purpose of this work plan is to recognize and set forth the conservation problems of the district and co-ordinate their solution with all available sources of assistance. The work plan will be based on authorization granted by (1) Secretary of Agricultures Memorandum 1488; (2) Montana State Soil and Water Conservation District Law, Section 76-101 to 76-117 Revised Code of Montana and (3) Memorandum of Understanding between the Park Soil and Water Conservation District and the United States Department of Agriculture. (Copies Attached)

II. LOCATION OF PARK SOIL and WATER CONSERVATION DISTRICT

The District includes all of Park County, Montana and that part of Gallatin County which drains into Brackett Creek and Flathead Creek which are part of the Shields River Drainage. In Park County there are 1,681,280 acres. The Gallatin County portion of the District comprises 83,200 acres for a total of 1,764,480 acres.

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III. CONDITIONS & PROBLEMS

A. Physical Characteristics

1. The climate of the district is similar to most of the intermountain area. The precipitation ranges from 9 inches in some parts of the valleys to 20+ inches in the mountains. Snowfall is heavy making travel difficult and the feeding of livestock a necessity.

   The temperature of the district is characterized by great

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A. Physical Characteristics

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extremes. Livingston averages 118 days between 32 degree temperatures while Wilsall station averages 64 days frost free period. Average days between 28 degree readings are Livingston weather station 145 days and Wilsall 108 days. The extremes in temperature range from 106 degrees in summer to 45 degrees below in winter.

The area is semi-arid and requires irrigation or alternate crop-fallow in order to raise a crop. In the higher mountain areas some continous cropping can be practiced, but short growing season limits crop porduction to hay and pasture with limited cereal crop production.

The district has a moderate amount of wind which at times reaches high velocities. Chinook winds occur in the southern portion of the district which often takes the snow off the ranges.

2. Topography and Drainage

The Shields, the Boulder and the Yellowstone Rivers are the main drainages of the district.

The topography of the district ranges from the steepest craggiest mountains to sharply rolling lands, bench lands, nearly level stream valleys. The soils that are tilled in the district vary from 1% to 20% slope with the average about 4%.

B. Resources

1. Soils

Soil color zones included in this district are Chestnut (Dark Brown), Chernozem and Prairie (Parklands). The soils are developed on alluvial bottomlands, stream terraces, old alluvium on high benches and fans and residual uplands. The principle residual materials are silty, clayey and shaly

deposits of the Livingston formation and cretaceous shales. Some shallow soils are being farmed, particularly along the narrow stream valleys and on foothill slopes, but most of the farmland soils are moderately deep to deep. Medium and moderately heavy textures predominating.

In general, the soils are productive and for most of the area only slight to moderate erosion has occurred. There are some steep slopes being farmed. These probably constitute 25% of the total cropland area. Such areas are mostly dryland in a small grain fallow system and on these areas all of the topsoil has been removed in some places.

There are some moderately wet to very wet lands which need drainage if the highest production is to be obtained. A few soils are saline or alkaline, but do not constitute a major problem.

2. Native Vegetation

The higher peaks and ridges in the different mountain ranges lying above timber line are covered with slide rock or talus. The higher mountain slopes and basins below the alpine sections are well covered with Lodge Pole Pine and Douglas Fir. Limber Pine and Rocky Mountain Juniper are found at the lower elevations.

The district is covered with grasses, the principal ones being: Bluebunch wheat grass, Needle and thread, Western wheat grass, Green needlegrass, Idaho Fescue, and Blue Gramma Grass. There are many shrubs, sage brush, willows and cottonwoods.

3. Water Resources

The Shields, Boulder and Yellowstone Rivers and their tributaries

supply almost all of the water for all irrigation demands. The Yellowstone tributaries and the Shields and its tributaries do not meet the needs of the irrigated or irrigable lands which they serve. There are 85 drainages in the District which irrigate 100 acres or more. There are numberous storage dam possibilities which can be constructed. Poor irrigation systems, improper distribution systems and excessive use of irrigation water are problems which when corrected would increase the efficiency of the water available. Adequate domestic and livestock water is available in most areas. The development of springs, building of dams, and drilling of wells will provide and additional water that may be needed for domestic or livestock purposes.

C. Agricultural Development

1. Historical Background

The first white man who came to the area were hunters and trappers. The Emigrant Gulch Mine was discovered in the early 60's by miners who came from Virginia City. This discovery brought in a large number of people and the first agriculture was gardens in the Yellowstone Valley. Some small grains were planted prior to 1880, but on a small scale. The Shorthill family set up on the east side of the river in 1880, and in 1882 the Crow Reservation was moved back and they homesteaded this area. Nelson Story brought in the first Longhorn cattle from Texas in 1866.

Operators from Bozeman started wintering work cattle in the Shields Valley in the 70's and the Myers Brothers settled near Wilsall in the 70's. The Smith Brothers started running sheep in the Shields valley in the early 80's. The Homesteaders

started coming into the Shields Valley about 1880 and the area was rapidly settled. Financing was easy during those times and a man's word was his bond.

The Northern Pacific Railway was built through Livingston in 1882 and 1883 and with it came droves of people which gave impetus to agriculture.

The Castle Mines (silver) were opened in the late 80's. The ore from this mine which is in Meagher County was freighted to Livingston by wagon trains pulled with horses and cattle. This increased the need for hay and grain giving agriculture another boost.

Yellowstone Park was opened in 1872, but the only entrance at that time was from Bozeman. After the Northern Pacific Railway came to Livingston, the entrance through Gardiner was opened. All travel at this time was with horses and the need for hay and grain again increased.

The Homesteaders took up all the available lands and the agriculture of the area changed to hay and grain. The agriculture today in the area includes cattle, sheep, with hay produced chiefly for feed. Cash grain is raised under irrigation and dryland.

2. Changes in Agriculture

Since the formation of the district in 1949 there has been a general trend towards more specialization in the agricultural area. Some potatoes, poultry and peas for seed were grown commercially and very few poultry products. The area is primarily a feeder cattle producing area with some dry-crop cereal grains grown in combination with a livestock enterprise.

Sheep numbers have shown a sharp decline in the past twenty years. The dairy products sold in the District in 1950 were valued at $225,500. The dairy industry has declined to a sale valued at $131,219 in 1960.

The following table shows number of farms in Park County according to size for the years of 1944, 1960, and 1964.

Size of Unit	Number of Farms 1944	Number of Farms 1960	Number of Farms 1964
10-49 acres	40	25	18
50-69	11	1	2
70-99	13	7	3
100-139	11	13	9
140-179	39	24	17
180-219	15	10	4
220-259	15	11	13
260-499	96	62	50
500-999	125	74	71
1000 acres and over	188	266	220
	610	458	407

The total number of farms in Park County in 1944 was 610; in 1960, the number was 458; and in 1964, the number was 407. The number of farms over 1000 acres has increased markedly while all other sized farms below 1000 acres decreased in number.

3. Land Ownership

Private	48%
Forest Service	45%
National Park Service	4%
State Land	2%
Bureau of Land Management	1%
	100%

4. Public Facilities

The District has a population of approximately 14,000. Livingston and surrounding built-up area accounts for 9,000 of this total. Clyde Park, the only other incorporated town in the County, has a population of 250. The communities of Wilsall, Gardiner and Cooke City total approximately 1,000 residents.

The District is served by Interstate 90, U. S. Highway 89 and State secondary highways. The Northern Pacific mainline travels through the County with branch lines south up the Yellowstone and north up the Shields.

There are High Schools in Clyde Park, Gardiner, Livingston, and Wilsall.

D. Type of Agriculture

1. Livestock

This district's major agricultural enterprise is livestock raising. The income from livestock and livestock products in Park County in 1964 was $4,146,284 and from crops $901,769. Most of the hay raised in the county is fed to livestock and marketed that way. All breeds of livestock are raised with Herefords predominating. The value of dairy products sold in 1964 was $280,943.

2. Crops

(A) Irrigated Crops

The principle crops raised on irrigated lands are hay, pasture, wheat, barley, and oats. Irrigated pasture is becoming of more importance. These pastures can only be developed where there is full season water supply provided.

(B) Dryland Crops

The principle crops raised on dryland are wheat, barley, oats, and hay. This area is semi-arid and nearly all of the crops are grown on alternate crop-fallow basis.

3. Woodland-Private

The private woodland products sold in Park County in 1964

totaled $36,100.

Public lands administered primarily by the Forest Service.

4. Recreation

Eight farms in Park County reported 1964 income from hunting, fishing and other recreational services of $74,400. It is estimated that this amount might be closer to $225,000. This area of rural development will continue to grow with increasing demands.

E. Economic Conditions

1. Total value of farm products sold in Park County in 1964 was $5,436,794.
2. The average value per farm in 1964 was $108,164.
3. There are ample sources of operation credit in the area. Two banks are located in Livingston. The Farm Home Administration has an office in Bozeman which serves Park County. The Production Credit Administration office is located in Bozeman. Insurance Companies furnish the largest amount of money for real estate loans.

IV. SOIL AND WATER CONSERVATION PROBLEMS AND NEEDS

A. General

The major problems of soil and water conservation in the District are listed below:

(a) Proper rangeland use.

(b) Conservation and control of irrigation water
  1. Improvement and Consolidation of Irrigation Systems
  2. Full Season Water Supply
  3. Installation of water control structures

(c) Stream bank erosion

(d) Noxious weed control

(e) Soil fertility improvement

(f) Water erosion

(g) Wind erosion

B. Irrigated Land

There are 85 drainage systems in the District which supply water 100 or more acres of irrigable land. Associated with this situation is the problem of many individual drainages needing storage reservoirs to provide full season water. Spring run-off on these drainages would provide full season water needs if the additional storage were available.

To get proper use, distribution, and conservation of water, the consolidation of ditches through group action is badly needed.

C. Range

Rangeland comprises 65 percent of the District and therefore, the proper use and protection of this resource is an important part of the District program.

The District estimates that 40 percent of the range is being improperly used. This is due to overstocking, lack of stockwater, lack of fencing, encroachment of plants and need for reseeding.

Irrigated pastures will be seeded to increase the available summer grazing where ample water is available. The District plans to encourage balancing livestock with the available range and hay.

The following table shows the range problems and needs:

Total acres of Private Grazing Land - 514,765

1. Over Grazed	170,000 acres
2. Needs Stockwater	50,000 acres
3. Encroachment of plants	30,000 acres
4. Needs Reseeding	15,000 acres

D. Non Irrigated Cropland

There is approximately 59,000 acres of dry cropland in the District. Nearly all of it is farmed on an alternate fallow crop system. About 39,000 acres of this needs some treatment such as stubble mulching, strip cropping, and grassed waterways.

CONSERVATION NEEDS INVENTORY

Practice	Unit	Amount
Dry Cropland		
Conservation Cropping System	Acres	6,000
Stubble Mulching	Acres	33,087
Stripcropping	Acres	6,000
Irrigated Cropland		
Irrigation Water Management	Acres	50,800
Drainage Field Ditch	Feet	18,000
Drainage Mains & Laterals	Feet	55,000
Irrigation Storage Reservoir	No.	79
Irrigation Land Leveling	Acres	2,100
Irrigation System, Surface & Subsurface	No.	350
Structures for Water Control	No.	2,300
Irrigation Canal and Laterals	Feet	500,000
Irrigation Field Ditch	Feet	1,500,000
Irrigation Ditch and Canal Lining	Feet	124,000
Rangeland		
Spring Development	No.	300
Farm Ponds	No.	50
Wells	No.	50
Range, Proper Use	Ac.	170,241
Deferred Grazing	Ac.	122,000
Range, Rotation Grazing	Acres	325,000
Troughs or Tanks for Livestock	No.	350
Irrigated Pasture and Hayland		
Pasture Planting	Acres	1,500
Pasture, Proper Use	Acres	2,000
Rotation Grazing	Acres	2,000
Dry Pasture		
Pasture Planting	Acres	2,370
Proper Pasture Use	Acres	2,370
Rotation Grazing	Acres	2,370

Wildlife and Recreation

Fish Pond Stocking	No.	50
Wildlife Habitat Preservation	Acres	7,000
Camp and Picnic Facilities	Family units	63
Recreation Developments	No.	12
Buildings and Physical Facilities	No.	6

Woodland

Farmstead and Feedlot Windbreak	Acres	100
Field Windbreak	Acres	50
Woodland Direct Seeding	Acres	500
Woodland Intermediate Cutting	Acres	30,000

D. Miscellaneous Problems

1. Streambank Protection

There is a serious erosion problem on the banks of the Yellowstone and Shields River. This problem not only affects the adjacent land but the fish habitat is also seriously endangered.

2. Weed Control

Area group action is needed in a cooridinated effort to establish satisfactory control and eradication programs. The cooperation of the National Park Service will be required to keep the infestation of Dalamation Toadflax from spreading downstream.

3. Shelterbelts

The District will encourage operators to plant shelterbelts for protection of farmsteads and livestock.

4. Land Use

Balanced land use and planning multiple and conflicting land use. Increasing population and the associated demands for food, fiber, roads and open space for recreation.

5. Insect and Rodents

Alfalfa, weevil and rodents are doing considerable damage. Need additional research and technology in the use of agricultural chemicals which will permit adequate, Control without undesireable side effects.

6. Assistance

The District to carry out its goals needs additional manpower from either private or public sources.

E. Equipment

There is more than adequate amount of contractors and equipment available to do the work in the District. The problem is furnishing the technical assistence to keep up to the demand of the contractors, farmers and ranchers. Several ranchers own their own heavy earth moving equipment.

F. Education

1. The District plans to promote inclusion of the urban area in its district and be represented on the board of supervisors.
2. Information about how the Soil and Water Conservation District can assist all people will be emphasized.
3. The work of the District will be published at the time of the annual meeting to inform the people of the scope of its accomplishments.
4. Meetings and films will be used to show the problems and methods that are used to meet the resource problems of the District.

V. SOIL AND WATER CONSERVATION PROGRAM OF THE DISTRICT

A. Resource Planning

1. Individual soil and water conservation plans will be

prepared on farms and ranches who make application to the District.

2. Group plans will be prepared for groups of operators requesting assistence with their resource problem.

The concept of Rural Area Development will be considered in all plans of the District under the following programs:

Small Watershed Act (Public Law 566)
Conservation Operations (Public Law 46)
Agricultural Conservation Program
Farmers Home Administration Loans
Resource Conservation and Development Projects

Counsel and assistence of informed people from public and private sources will be sought in making complete analysis. The District recognizes that an organized, coordinated planned approach involving all segments of the community or area is necessary and vital to achieve a balanced total resource development program.

B. Establishment of Soil and Water Conservation Practices

1. The District will apply soil and water conservation practices as rapidly as possible. This will depend upon the available technical assistance and the educational program.

C. Maintenance of Conservation Work

The District will carry on an educational and contact program to encourage cooperators to maintain all soil and water conservation practices applied.

VI. REVISION OF DISTRICT PROGRAM

This District program will be revised when it is determined that changes are needed due to additional information, new problems and needs.

SUPERVISORS' RESOLUTION ADOPTING THE SOIL CONSERVATION DISTRICT PROGRAM

WHEREAS, a comprehensive Program designed to provide a well rounded and coordinated plan for the control and prevention of erosion and the conservation of soil and moisture resources for the Park Soil and Water Conservation District has been prepared and considered by this body in cooperation and after consultation with farmer committees, State Agricultural Extension Service, the Soil Conservation Service of the United States Department of Agriculture, and other agencies and persons.

NOW, THEREFORE, BE IT RESOLVED THAT THE Soil and Water Conservation District Program be, and the same is, hereby adopted as the official Conservation Program of the District, and the Secretary be, and hereby is, instructed to cause a copy of the same to be inserted in the minute book, immediately following the minutes of this meeting.

I, the undersigned, being the Secretary of the Park Soil and Water Conservation District, do hereby certify that the above is a true and exact copy of the resolution adopted by the Supervisors of the Park Soil and Water Conservation District at a meeting held on the 2 day of January, 1968.

Dated this 2 day of January, 1968.

Chairman

Secretary

Treasurer

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